

REMARKS

Claims 1, 3-22 and 24-49 are presently pending in this application. By this amendment independent claims 1 and 22 have been amended. Reconsideration is respectfully requested.

Allowable Subject Matter

The Examiner has indicated that claims 3-8, 12, 18-20, 24-29, 41 and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten into independent form.

Rejected Claims

The Examiner has rejected the claims 1, 2, 9, 11, 13, 15, 16, 21-23, 30-34, 37, 38, 40, 42, 44-46 and 49 under 35 U.S.C. §102 in view of Cheatle. Claims 10 and 39 are rejected under 35 U.S.C. §103 over Cheatle in view of Porter. Reconsideration is respectfully requested.

The applicants' invention uses an entropy measure to automatically determine where to crop the image. Entropy measures the "business" of an image or region. Applicants' specification gives a formal definition of entropy at paragraph [0020]. Applicants' system uses the entropy measure as an indication of user "interest."

One advantage of applicants' entropy measure is that it can be mathematically computed without a great deal of complex decision logic. Thus applicants' entropy measure works quite well for handheld devices that typically have minimal computational resources or memory.

The Cheatle reference describes a system that appears to use photographic compositional rules (such as the “rule of thirds”) to determine where to automatically crop. Thus, Cheatle uses a complex set of rules which the system must evaluate and, where conflicting results obtain, resolve any rule conflicts. In one embodiment the item of “interest” is tagged first so the algorithm can operate upon it.

In order to perform its rule-based analysis, Cheatle teaches that the image is first processed by: (1) optionally resampling to reduce number of pixels, (2) blurring the images and (3) merging regions of similar appearance. [see Cheatle paragraph 0049-0052. However, performing this preprocessing step on the image will change the entropy of the image. Blurring and merging will reduce the entropy of the affected region.

Thus, Cheatle is clearly not designed to exploit the entropy as a measure of “interest” as we do in our invention.

The Examiner has stated in the rejection of claim 2 that Cheatle uses entropy, and states that Cheatle’s penalty scores [Cheatle paragraphs 0154 and 0155] correspond to entropy. Applicants’ respectfully disagree. Cheatle is applying a penalty score which is a calculated score [see Cheatle paragraph 0143] representing the weighted sum of “contributions” from the set of compositional rules used to determine the optimal crop.

In support of applicants’ position that Cheatle is not using an entropy measure, applicants’ are submitting herewith the Declaration of inventor Katherine Guo. In her Declaration, Dr. Guo explains how the applicants’ invention is different from Cheatle, and includes several figures useful in understanding the distinction between Cheatle’s

compositional rules-based cropping system and applicants' system which uses an entropy measure.

In order to more fully distinguish the applicants' invention, independent claim has been amended to incorporate the recitations of claim 2; independent claim 22 has been amended to incorporate the recitations of claim 23. Both of these independent claims thus now fully recite applicants' entropy measure. As set forth in the Guo Declaration, Cheatle is not using an entropy measure.

Accordingly it is respectfully submitted that the claims are now allowable over the cited art. Reconsideration and allowance is therefore respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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E-Signature: /Gregory A. Stobbs/
By: Gregory A. Stobbs
Reg. No. 28.764
HARNES. DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600